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AUTHOR Rogers, Brenda H.
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ABSTRACT

The validity of William Sedlacek's Non-Cognitive Questionnaire (NCQ) for predicting college grade point average (GPA) of black freshmen was studied with 259 black freshmen at North Carolina State University. The relationship of the 24 NCQ items to their first-year GPA was examined through regression analyses. In the past the regression model on which admission decisions have been based included three variables: high school GPA, and Scholastic Aptitude Test (SAT) math and verbal scores. Predictive models for black males and females were examined separately. For both males and females, high school GPA was the best predictor of college GPA, and SAT scores were not significant. The significant NCQ items differed for males and females. Showing pride in leadership activities, not getting easily discouraged, and expecting to have a difficult time at college were three noncognitive items that predicted black males' college GPA. For black females, the most important noncognitive variable was having support from friends and relatives to attend college. The items related to pride in accomplishments and support from friends and relatives were related to GPA. The incorporation of noncognitive factors into an admission's interview is discussed, and the NCQ is appended. (Author/SW)

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THE USE OF NON-COGNITIVE VARIABLES IN THE PREDICTION OF BLACK FRESHMEN'S ACADEMIC PERFORMANCE

By

Brenda H. Rogers, Ph.D.
Senior Institutional Research Officer
North Carolina State University
Box 7002
Raleigh, NC 27695-7002
(919) 737-2776

Paper presented at the annual meeting of the
Southern Association of Institutional Research
Little Rock, Arkansas, October, 1984

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This paper was presented at the 1984 Annual Conference of the Southern Association for Institutional Research held in Little Rock, Arkansas, October 24-26, 1984. It was reviewed by the SAIR Publications Committee and was judged to be of interest and pertinent to others concerned with the research in higher education. This paper has therefore been selected to be included in the ERIC collection of Conference Papers.

Richard D. Howard
President, SAIR

THE USE OF NON-COGNITIVE VARIABLES IN THE PREDICTION OF BLACK FRESHMEN'S COLLEGE PERFORMANCE

Brenda H. Rogers, Ph.D.
North Carolina State University
Raleigh, NC

This study examines the validity of the Non-Cognitive Questionnaire (NCQ) for predicting college grade-point average of black freshmen. The NCQ is based upon William Sedlacek's theory and research. A sample of 259 black freshmen took the NCQ during summer orientation. The relationship of the 24 NCQ items to their first-year GPA is examined through regression analyses. The regression model on which admission decisions have been based in the past included three independent variables: high school grade-point average (HSGPA), SAT-Math (SAT-M) scores, and SAT-Verbal (SAT-V) scores. The increase in the R-square was tested after the addition of the NCQ items. The R-square value significantly increased from .1415 to .2436 with the addition of seven NCQ items, selected through a preliminary stepwise regression analysis. The second hypothesis tested whether the NCQ items were better predictors of college GPA than the three cognitive variables (HSGPA, SAT-M, AND SAT-V). The stepwise regression analysis resulted in HSGPA being entered first, followed by five NCQ items, all of which reached the .15 level for entry into the model. SAT-M and SAT-V were not significant predictors of college GPA.

Finally, predictive models for black males and females were examined separately. For both black males and females, high school GPA was the best predictor of college GPA, and neither SAT-Math nor SAT-Verbal was significant. The significant NCQ items differed for males and females. Showing pride in leadership activities, not getting easily discouraged, and expecting to have a difficult time at college were three non-cognitive items that predicted black males' college GPA. For black females, the most important non-cognitive variable was having support to attend college from friends and relatives. Consistently, the items related to pride in accomplishments and support from friends and relatives were related to college GPA. The application of these research findings through the incorporation of the non-cognitive factors into an admission's interview is discussed.

THE USE OF NON-COGNITIVE VARIABLES IN THE PREDICTION OF BLACK FRESHMEN'S ACADEMIC PERFORMANCE

INTRODUCTION

The improvement of selection procedures for black freshmen is an important issue at North Carolina State University. Not only has the University established a goal of increasing black enrollment as a part of the Consent Decree, but also the administration is committed to improving the academic performance and increasing the graduation rates of black students. One result of this commitment to racial equity is an examination of the admission criteria used to select freshmen. Traditionally, a predicted grade-point average (PGA) has been generated based upon standard objective measures, specifically high school grade-point average (HSGPA), SAT-Math (SAT-M) scores, and SAT-Verbal (SAT-V) scores. Research, however, suggests that these measures are less predictive of future college success for nontraditional students than for the traditional college population (Farver, Sedlacek, and Brooks, 1975; Pfeifer and Sedlacek, 1971, 1974; Tracey and Sedlacek, 1982). Therefore, the Office of Institutional Research undertook a research project to assess the predictive validity of a measure of non-cognitive variables that theoretically relate to minority success in college. This research used the Non-Cognitive Questionnaire (NCQ) developed by Sedlacek and Brooks (1976).

This paper reports part of on-going research to identify valid non-cognitive measures that improve the prediction of black students' success at North Carolina State University. The folowing hypotheses guided this research.

The first hypothesis is that the addition of the non-cognitive items from the NCQ will significantly increase the power to predict blacks' grade-point average (GPA) earned at the end of their freshman year. Preliminary research using the fall GPA as the criterion supported this hypothesis (Rogers and Hughes, 1984). Furthermore, Tracey and Sedlacek (1982) provided data that non-cognitive dimensions improved the ability to explain GPA.

The second hypothesis is that non-cognitive variables will be stronger predictors of blacks' GPA than standard predictors (HSGPA, SAT-M, and SAT-V). The preliminary analysis found that selected NCQ items were better predictors than the SAT-M and SAT-V (Rogers and Hughes, 1984).

Finally, it is hypothesized that the best regression model, using both cognitive and non-cognitive variables, for black males will differ from that of black females. Pfeifer and Sedlacek (1971) found support for separate equations by race-sex groupings.

METHOD

The sample consisted of 259 black freshmen who entered North Carolina State University in the fall of 1983 and who voluntarily attended a summer orientation program designed to assist in the adjustment of black students to a large, predominantly white institution. This group constituted 73% of all new black freshmen. Of the 259 who completed the NCQ, only those with complete data were included in the analyses.

Since over a hundred new black freshmen did not complete the questionnaire, t-tests were performed to determine if the sample used in this study differed significantly from the other black freshmen on the dependent variable (earned grade-point average at the end of the freshman year) and the three cognitive

variables used as independent variables (HSGPA, SAT-M, and SAT-V). The sample had significantly higher mean scores on all four of the measures. Significance reached .05 level in all cases. See Appendix A.

The questionnaire was a modification of Sedlacek's Non-Cognitive Questionnaire (NCQ), which appears in Appendix B with abbreviated item names. The NCQ consists of nineteen questions, scored to yield 24 variables. Three open-ended questions focus on goals, pride in accomplishments, and offices held in school; these are scored to yield eight variables (Items 4, 5, and 19).

Tracey and Sedlacek (1982) reported test-retest reliabilities of .70 to .94 for the Likert items over a two-week period. In addition, they report interrater reliabilities of .88 to .98 for the open-ended items and coefficient alphas of .54 to .73 for scales.

The hypotheses are tested through regression analyses using the Statistical Analysis System (SAS, 1982). The criterion measure is earned grade-point average (GPA) at the end of the freshman year, based on a 4.0 scale. In the first analysis, the standard cognitive variables used to select freshmen to this university were entered into the regression equation in a fixed order (HSGPA, SAT-M, and SAT-V). The 24 NCQ items were added and the increase in the R-square after the addition of the non-cognitive variables was tested.

In addition, a stepwise regression analysis using the three academic predictors and the 24 non-cognitive variables was conducted to determine whether the non-cognitive variables are stronger predictors of college GPA than the traditional cognitive variables.

To test the third hypothesis, separate regression analyses were performed for black males and females. The improvement in the R-square with the addition of selected non-cognitive variables was tested to determine the best models to predict GPA for black males and black females.

RESULTS

The first hypothesis tested was that the NCQ items would improve the power to predict black freshmen's GPA. In the reduced regression model with the inclusion of HSGPA, SAT-M, and SAT-V in that order, the R-square value was .1415. The addition of the 24 NCQ items increased the R-square to .2813. The test (Kerlinger and Pedhazur, 1973, p. 178) to determine if the addition of these variables increased the R-square did not yield a significant F-ratio (F=1.62237). Therefore, seven NCQ items were identified through a stepwise regression analysis and were added to the reduced model. The resulting R-square of .2436 was a statistically significant increase over the reduced model with only the cognitive variables (F=4.300). See Appendix D for variables used in this model.

To test the second hypothesis, the three cognitive variables (HSGPA, SAT-M, and SAT-V) and all 24 NCQ items were entered into the model in a stepwise regression analysis. The significance level of .15 was set for entry into the model. Only five of the 24 variables reached this significance level. High school grade-point average was the strongest predictor, accounting for 11% of the variance in the GPA. However, SAT-Math and SAT-Verbal did not reach the .15 significance level, but the following NCQ items were retained in the model, increasing the R-square to .21:

1. "My friends and relatives don't feel that I should go to college."
2. "Please list three things that you are proud of having done."
3. "I get easily discouraged when I try to do something and it doesn't work."
4. "There is no use doing things for people; you only find that you get it in the neck in the long run."

Regression analyses with variables in fixed order were performed separately for black males and females. Grade-point average was regressed on HGSPA, SAT-M, and SAT-V. For both black males and females, the model was significant but only high school grade-point average had a T-value that reached the .05 significance level.

The R-square value was .1465 for males and .1404 for females.

Non-cognitive variables were selected based on a preliminary stepwise analysis and added to the model. For black males, four non-cognitive variables increased the R-square from .1465 to .3188. The F-ratio of 6.5771 is significant, and these three non-cognitive variables reached the .05 significance level:

1. "My friends and relatives don't feel that I should go to college."
2. "I get easily discouraged when I try to do something and it doesn't work."
3. "I expect to have a harder time than most students at NCSU."

For black females, the R-square value increased from .1404 to .2252 with the addition of four non-cognitive variables. The F-ratio of 3.1740 is significant; however, only one of the NCQ items had a significant T-value:

"My friends and relatives don't feel that I should go to college."

The full and reduced models are presented in Appendix F for males and Appendix G for females.

DISCUSSION

Through an exploratory stepwise regression analysis, a model was found that significantly improved the ability to explain GPA for black freshmen. Although seven NCQ items were included in this model, only three had significant T-values. Apparently, past activities that indicate community service are important predictors of future college success. Also, having friends and relatives that support the black students' decision to attend college is important for future success. The third variable that related significantly to GPA was agreement that "the University should use its influence to improve social conditions in the State." This item is supposed to measure a realistic understanding of racism. Perhaps if the black student views the University as an appropriate institution to eliminate racism, he/she will feel more commitment to the institution and consequently perform better academically.

Interestingly, the SAT-Math and SAT-Verbal scores did not contribute to the explanation of college GPA. In fact, selected NCQ items were better predictors of GPA than SAT-Math and SAT-Verbal. Again, support from friends and relatives and pride in accomplishments were important variables. In addition, not getting easily discouraged and having commitment to help others are more important factors in the explanation of blacks' college performance than SAT-Math and SAT-Verbal. However, high school grade-point average was the strongest predictor in all cases.

As expected, the models for black males and females did differ somewhat. However, for both males and females, high school GPA was the best predictor of college success; neither SAT-Math nor SAT-Verbal added to the explanation. For black males, pride in accomplishments that related to leadership was a factor in future college performance. Not getting easily discouraged and expecting to have a difficult time at college were two other predictors of black males' GPA. Evidently persistence and a realistic self-appraisal of academic difficulties lead to better performance in college for black males.

For black females the most important non-cognitive variable was having support from relatives and friends to attend college.

Two items which in various analyses emerged as significant in predicting college GPA were the sense of pride in past accomplishments and support for college attendance by friends and relatives. Leadership and community service experiences may build pride and self-confidence in future performance. Having the support of family and friends means that the student has someone who will provide encouragement to continue at college even if the student feels discouraged or homesick.

The non-cognitive variables measured by the NCQ increased the ability to predict the GPA. Only high school grade-point average was a better predictor than four of the NCQ items. For this sample of black freshmen, the SAT-M and SAT-V scores were not significant predictors of freshman year GPA. Omitting the SAT-M and SAT-V scores for blacks would not affect the ability to explain earned GPA.

Thus, factors other than standardized tests may be more valid variables to use in the selection of black students.

This research, however, has some weaknesses. First, the sample differed significantly from black freshmen who did not take the NCQ. Therefore, we can not generalize the results to all black freshmen at North Carolina State University. In addition, data were not collected on white students, so that we cannot conclude that non-cognitive factors are more important for predicting black students' performance than white students. Because of these weaknesses, a similar instrument, modified to eliminate the open-ended items, was administered to all entering freshmen for fall 1984.

The multiple correlations are biased upward because the preselection of variables is capitalizing on sampling error among correlations (Nunnally, 1967, p. 164). Therefore, with larger samples, shrinkage in the multiple correlations would occur.

Another concern was the inability of earlier research to replicate the eight factors identified by Sedlacek (1983). Consequently, items, not factor scores, were used in these analyses. Factor analysis will be conducted on the new data to determine if stable factors emerge.

This research, however, does suggest that non-cognitive dimensions add new information that improves the prediction of black freshmen's college success. The application of this research to the admissions decisions is the next step in this project. The following section outlines plans for the use of these findings.

Application of Findings to Admissions Procedures

Since the NCQ items increase the ability to predict black freshmen's first year performance, the research supports the use of these items in the selection of black freshmen. However, the predicted grade-point average (PGA) must be comparable from student to student, so it is not advisable to use these items in the computation of black applicants' GPA, and not other applicants. In addition, the results of this research need to be replicated on other samples of black students. Therefore, a possible use of these non-cognitive items is to develop open-ended questions, to be used in a personal interview, that measure theoretical constructs underlying these items.

Last year all black applicants with marginal PGA's were invited to campus to be interviewed. These interviews were intended to assess the applicants' motivation and to identify the factors that might have depressed high school performance and SAT scores. In essence, the interviews were to assess factors other than the standard test scores and high school grades. However, the interviews have not been based on a theory, nor have the questions been structured so that all applicants have responded to the same questions, nor has a consistent method of rating applicants been used. It seems that Sedlacek's eight non-cognitive factors provide a framework for structuring the interview process. The research on the 1983 black freshmen provides sufficient evidence of the predictive validity of the items to suggest an interview schedule aimed at measuring the underlying dimensions.

A group of faculty and staff with responsibility for the recruitment and retention of black students is developing a structured interview schedule and rating scales. Open-ended questions relating to Sedlacek's eight dimensions will be designed to elicit responses from applicants. Each applicant will be rated

on a scale of one to ten on each of the eight constructs. Three interviewers will independently rate the applicant on each dimension. The sum of the average scores on all eight factors will be the applicant's composite score. This composite score will constitute the overall assessment of the applicant on non-cognitive dimensions and will be one index considered in the decision to accept or reject the applicant.

A study to validate the interview process will be conducted by the Office of Institutional Research. The relationship of the interview score based on non-cognitive factors to earned GPA will be explored to determine if it is a better predictor than the predicted grade-point average. In addition, students with high interview scores will be compared to those with moderate interview scores with the expectation that students with high scores will have a higher average grade-point average at the end of the first year than those with low scores.

The application of this research is in the beginning stages. However, the Admissions Office, school deans and associate deans, associate provosts, and faculty are supportive of the use of non-cognitive factors in selecting black freshmen. The Office of Institutional Research intends to continue its efforts to identify valid predictors of black freshmen's college success and to suggest ways of incorporating the data into the process for reviewing black applicants.

APPENDICES

APPENDIX A

T-TESTS FOR DIFFERENCES BETWEEN SAMPLE AND OTHER NEW BLACK FRESHMEN

Variable: Grade-Point Average at End of Freshman Year

Group	N	Mean	Standard Deviation	T-Value	Significance Level
Sample	224	2.05	0.659	2.1976	.0286
Others	109	1.89	0.660		

Variable: High School Grade-Point Average

Group	N	Mean	Standard Deviation	T-Value	Significance Level
Sample	247	3.32	0.390	5.2612	.0001
Others	113	3.04	0.499		

Variable: SAT-Verbal

Group	N	Mean	Standard Deviation	T-Value	Significance Level
Sample	247	41.2	7.979	2.1615	.0313
Others	112	39.2	9.004		

Variable: SAT-Math

Group	N	Mean	Standard Deviation	T-Value	Significance Level
Sample	247	47.9	8.381	2.6376	.0091
Others	112	45.1	9.811		

APPENDIX B
ENTERING MINORITY STUDENT SURVEY

This survey is being conducted by North Carolina State University in its efforts to increase the retention and graduation rates of black students, as well as enhance their academic achievement. Your cooperation in completing this survey will be greatly appreciated. Thank you.

NAME: _____ SEX: _____
(LAST) (FIRST) (M.I.)

SOCIAL SECURITY NUMBER: _____ BIRTH DATE: _____
(1-9)

ADDRESS: _____ CITY: _____ STATE: _____ ZIP: _____

FATHER'S OCCUPATION: _____ MOTHER'S OCCUPATION _____

PLEASE CIRCLE THE NUMBER WHICH INDICATES YOUR RACE OR ETHNIC GROUP:
1=Black 2=Asian 3=Spanish surname 4=American Indian 5=All Other 6=Decline to answer

PLEASE ENTER THE NUMBER CORRESPONDING TO YOUR RESPONSE CHOICE ON THE LINE BESIDE EACH QUESTION:

(VARIABLE NAMES)

_____1. How much education do you expect to get in your lifetime?
(AMTED)
1= college, but less than a bachelor's degree
2= BA or equivalent
3= 1 or 2 years of graduate or professional study
4= Doctor of Philosophy or Doctor of Education
5= Doctor of Medicine
6= Doctor of Dental Surgery
7= Bachelor of Law
8= Bachelor of Divinity
9= Other, please specify _____

_____2. About 50% of the University students typically leave before receiving a degree. If this should happen to you, which of the following do you think would be the MOST LIKELY cause?
(REASON)
1= absolutely certain I will obtain a degree
2= to accept a good job
3= to enter military service
4= it would cost more than my family and I could afford
5= marriage
6= disinterest in study
7= lack of academic ability
8= inefficient reading or other study skills
9= other, please specify _____

_____3. What do you feel is the MAIN reason there are few blacks at North Carolina State University?
(NO BLACKS)
1= blacks prefer to go to black colleges
2= The University discourages them from coming because of its tough academic reputation
3= The University's racist practices discourage them from coming
4= The University's racist image discourages them
5= don't know
6= other, please specify _____

_____4. Please list three goals that you have for yourself right now:
(GOAL 1) (Scored for long-range goals)
(GOAL 2) (Scored for knowledge acquired in a field)

_____5. Please list three things that you are proud of having done:
(PROUD 1) (Scored for leadership)
(PROUD 2) (Scored for community service)
(PROUD 3) (Scored for knowledge acquired in a field)

Please indicate the extent to which you agree or disagree with each of the following items. Respond to the statements below with your feelings at present or with your expectations of how things will be here. Write in your answers in the space to the left of each item.

KEY: 1= strongly agree
2= agree
3= neutral
4= disagree
5= strongly disagree

- (INFLUENCE) _____ 6. The University should use its influence to improve social conditions in the State.

- (B AVERAGE) _____ 7. It should not be very hard to get a "B" (3.0) average at NCSU.

+ (DISCOURAGE) _____ 8. I get easily discouraged when I try to do something and it doesn't work.

- (LOOK UP TO) _____ 9. I am sometimes looked up to by others.

- (PROBLEMS) _____10. If I run into problems concerning school, I have someone who would listen to me and help me.

+ (NECK) _____11. There is no use in doing things for people; you only find that you get it in the neck in the long run.

- (LEADER) _____12. In the group where I am comfortable, I am often looked to as a leader.

+ (HARDTIME) _____13. I expect to have a harder time than most students at NCSU.

- (FINISH) _____14. Once I start something, I finish it.

- (ACT) _____15. When I believe strongly in something, I act on it.

- (SKILL) _____16. I am as skilled academically as the average applicant to NCSU

+ (CHANGE) _____17. People can pretty easily change me even though I thought my mind was already made up on the subject.

+ (RELATIVE) _____18. My friends and relatives don't feel I should go to college.

19. List offices held and/or groups belonged to in high school or in your community.
(OFFICE 1) (Scored for leadership)
(OFFICE 2) (Scored for community service)
(OFFICE 3) (Scored for knowledge acquired in a field)

- Reverse scoring of item + Score as is
NOTE: The higher the score, the more positive on the variable.

APPENDIX C

MEANS AND STANDARD DEVIATIONS OF MINORITY SURVEY VARIABLES

VARIABLE	MEAN	STANDARD DEVIATION
AMTED	2.73	0.76
REASON	3.50	1.90
NO BLACKS	1.06	0.24
GOAL 1	2.26	0.46
GOAL 2	2.24	0.46
PROUD 1	2.46	0.64
PROUD 2	2.47	0.61
PROUD 3	2.46	0.63
INFLUENCE	2.11	0.72
B AVERAGE	2.27	0.65
DISCOURAGE	3.54	1.08
LOOK UP TO	2.14	0.62
PROBLEMS	1.73	0.64
NECK	1.61	0.67
LEADER	2.73	0.84
HARDTIME	3.60	0.88
FINISH	1.88	0.70
ACT	1.68	0.65
SKILL	1.82	0.70
CHANGE	4.14	0.85
RELATIVE	4.83	0.56
OFFICE 1	2.52	0.75
OFFICE 2	2.48	0.76
OFFICE 3	2.48	0.76

APPENDIX D

REGRESSION MODEL WITH COGNITIVE AND NON-COGNITIVE VARIABLES

Dependent Variable: Freshman Year GPA

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE	F-VALUE
Model	10	24.9373	2.4937	7.245*
Error	225	77.4477	0.3442	
Corrected Total	235	102.385		

R-Square = 0.2436

Standard Error of the Estimate = .5731

Variable	Parameter Estimate	T-Value
HSGPA	0.3747	3.592*
SATM	0.0062	1.167
SATV	0.0016	0.273
PROUD 2	0.2218	3.329*
RELATIVE	0.2426	3.483*
NECK	0.1133	1.895
DISCOURAGE	0.0717	1.903
INFLUENCE	-0.1110	-2.011*
FINISH	0.0775	1.318
B-AVERAGE	-0.0684	-1.124

* Significant at .05 level

APPENDIX E

STEPWISE REGRESSION ANALYSIS

Independent Variable = First Year GPA
Dependent Variables = HSGPA, SAT-M, SAT-V, and all NCQ items

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE	F-VALUE
Model	5	21.1769	4.2354	12.07*
Error	221	77.5523	0.3509	
Corrected Total	226	98.7292		

Variables In order of Entry	B-VALUE	F-VALUE
HSGPA	0.4439	18.82*
Relative	0.2481	13.22*
Proud 2	0.2118	0.05*
Discourage	0.0736	0.07
Neck	0.1124	0.07

R-square = 0.2145

Standard error of estimate = .5841

* Significant at .05 level

APPENDIX F

REGRESSION ANALYSES

FOR BLACK MALES

REDUCED MODEL

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE	F-VALUE
Model	3	7.2894	2.4298	6.179*
Error	113	42.4706	0.3758	
Corrected Total	116	49.7510		

Variable	Parameter Estimate	T-Value
HSGPA	0.4346	2.876*
SAT-M	0.0056	0.733
SAT-V	0.0111	1.380

R-Square = .1465

Standard Error of the Estimate = .6088

FULL MODEL

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE	F-VALUE
Model	7	14.6464	2.0923	6.731*
Error	104	32.3285	0.3109	
Corrected Total	111			

Variable	Parameter Estimate	T-Value
HSGPA	0.3531	2.459*
SAT-M	0.0042	0.603
SAT-V	-0.0006	-0.080
AMTED	0.1441	1.859
PROUD 1	0.3368	3.794*
DISCOURAGE	0.1672	3.122*
HARDTIME	-0.1647	-2.672*

R-Square = .3188

Standard Error of the Estimate = .5439

*Significant at .05-level

APPENDIX G

REGRESSION ANALYSES

FOR BLACK FEMALES

REDUCED MODEL

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE	F-VALUE
Model	3	7.3960	2.4653	6.644*
Error	122	45.2695	0.3711	
Corrected Total	125	52.6655		

Variable	Parameter Estimate	T-Value	
HSGPA	0.5522	2.876*	R-Square = .1404
SAT-M	0.0159	0.733	Estimated Error of the Estimate = .6110
SAT-V	-0.0003	-1.380	

FULL MODEL

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE	F-VALUE
Model	7	11.8213	1.6888	4.818*
Error	116	40.6633	0.3505	
Corrected Total	123	52.4846		

Variable	Parameter Estimate	T-Value	
HSGPA	0.5351	3.561*	R-Square = .2252
SAT-M	0.0128	1.485	Standard Error of the Estimate = .5801
SAT-V	-0.0032	-0.388	
LOOK UP TO	-0.1126	-1.309	
HARDTIME	0.0987	-1.390	
SKILL	0.1578	1.829	
RELATIVE	0.2207	2.174*	

*Significant at .05 level

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